

**IN THE CLAIMS:**

1 1. (CURRENTLY AMENDED) A method for allowing a router to efficiently determine  
2 a capability and configuration of a peer router in a computer network, the method com-  
3 prising the steps of:

4 automatically determining which capability mode of operation the peer router  
5 supports by sending an initial message from the router to the peer router, the initial mes-  
6 sage including a first predetermined value of the capability;

7 if the router receives a positive acknowledgement of the initial message from the  
8 peer router, determining that the peer router supports exchanges of messages using a new  
9 capability mode of operation; and

10 if the router receives a negative acknowledgement of the initial message from the  
11 peer router, deciding that the peer router does not support the new capability mode of op-  
12 eration; and switching to an old capability mode of operation by resending the initial  
13 message with a second predetermined value of the capability.

1 2. (ORIGINAL) The method of Claim 1 wherein the step of deciding comprises the step  
2 of, if the router does not receive a response at all within a predetermined time, deciding  
3 that the peer router does not support the new capability mode of operation.

1 3. (ORIGINAL) The method of Claim 1 wherein the initial message is Border Gateway  
2 Protocol (BGP) routing protocol message and wherein the capability is a time-to-live  
3 (TTL) parameter.

1 4. (ORIGINAL) The method of Claim 3 wherein the new capability mode of operation  
2 is defined by BGP TTL Security Hack (BTSH).

1 5. (ORIGINAL) The method of Claim 4 wherein the first predetermined value of the  
2 TTL parameter capability is 255.

1 6. (ORIGINAL) The method of Claim 3 wherein the second predetermined value of the  
2 TTL parameter is 1.

1 7. (ORIGINAL) The method of Claim 1 further comprising the steps of, in response to  
2 the router receiving a negative acknowledgement of the initial message from the peer  
3 router:

4 upgrading the peer router to the new capability mode of operation;

5 rebooting the peer router, thereby destroying an existing session between the  
6 routers;

7 establishing a new session by sending messages with the first predetermined value  
8 of the capability; and

9 communicating between the routers using messages with the first predetermined  
10 value of the capability.

1 8. (ORIGINAL) A system adapted to allow a router to efficiently determine a capability  
2 and configuration of a peer router in a computer network, the system comprising:

3 a routing protocol process executing in the peer router and adapted to receive an  
4 initial routing protocol message sent by an initiating routing protocol process executing in  
5 the router, the initial routing protocol message including a predetermined value of the ca-  
6 pability, the routing protocol process returning one of (i) a positive acknowledgement of  
7 the initial routing protocol message to the router if the peer router supports exchanges of

8 messages using a new capability mode of operation and (ii) a negative acknowledgement  
9 of the initial routing protocol message if the peer router does not support the new capabil-  
10 ity mode of operation.

1 9. (ORIGINAL) The system of Claim 8 wherein the routing protocol process executing  
2 in the peer router is the Border Gateway Protocol version 4 (BGP) routing protocol and  
3 wherein the capability is a time-to-live (TTL) parameter.

1 10. (ORIGINAL) The system of Claim 9 wherein the new capability mode of operation  
2 is defined by BGP TTL Security Hack (BTSH).

1 11. (ORIGINAL) The system of Claim 10 wherein the predetermined value of the TTL  
2 parameter capability is 255.

1 12. (CURRENTLY AMENDED) Apparatus adapted to allow a router to efficiently de-  
2 termine a capability and configuration of a peer router in a computer network, the appa-  
3 rus comprising:

4 means for sending an initial message from the router to the peer router, the initial  
5 message including a first predetermined value of the capability;

6 ~~if the router receives a positive acknowledgement of the initial message from the~~  
7 ~~peer router,~~ means for determining that the peer router supports exchanges of messages  
8 using a new capability mode of operation, if the router receives a positive acknowlede-  
9 ment of the initial message from the peer router,;

10 ~~if the router receives a negative acknowledgement of the initial message from the~~  
11 ~~peer router,~~ means for deciding that the peer router does not support the new capability  
12 mode of operation, if the router receives a negative acknowledgement of the initial mes-

13 | sage from the peer router, -and means-for switching to an old capability mode of opera-  
14 | tion by resending the initial message with a second predetermined value of the capability.

1 13. (ORIGINAL) The apparatus of Claim 12 wherein the means for deciding comprises,  
2 if the router does not receive a response at all within a predetermined time, means for de-  
3 ciding that the peer router does not support the new capability mode of operation.

1 14. (ORIGINAL) The apparatus of Claim 12 wherein the initial message is Border  
2 Gateway Protocol (BGP) routing protocol message, the capability is a time-to-live (TTL)  
3 parameter and the new capability mode of operation is defined by BGP TTL Security  
4 Hack (BTSH).

1 15. (ORIGINAL) The apparatus of Claim 12 further comprising, in response to the  
2 router receiving a negative acknowledgement of the initial message from the peer router:  
3 means for upgrading the peer router to the new capability mode of operation;  
4 means for destroying an existing session between the routers;  
5 means for sending messages with the first predetermined value of the capability;  
6 and  
7 means for communicating between the routers using messages with the first pre-  
8 determined value of the capability.

1 16. (CURRENTLY AMENDED) A computer readable medium containing executable  
2 program instructions for allowing a router to efficiently determine a capability and con-  
3 figuration of a peer router in a computer network, the executable program instructions  
4 comprising program instructions for:

5           automatically determining which capability mode of operation the peer router  
6       supports by sending an initial message from the router to the peer router, the initial mes-  
7       sage including a first predetermined value of the capability;

8           if the router receives a positive acknowledgement of the initial message from the  
9       peer router, determining that the peer router supports exchanges of messages using a new  
10      capability mode of operation;

11          if the router receives a negative acknowledgement of the initial message from the  
12      peer router, deciding that the peer router does not support the new capability mode of op-  
13      eration, and switching to an old capability mode of operation by resending the initial  
14      message with a second predetermined value of the capability.

1       17. (ORIGINAL) The computer readable medium of Claim 16 wherein the program in-  
2       struction for deciding comprises one or more program instructions for, if the router does  
3       not receive a response at all within a predetermined time, deciding that the peer router  
4       does not support the new capability mode of operation.

1       18. (ORIGINAL) The computer readable medium of Claim 16 wherein the initial mes-  
2       sage is Border Gateway Protocol (BGP) routing protocol message and wherein the capa-  
3       bility is a time-to-live (TTL) parameter.

1       19. (ORIGINAL) The computer readable medium of Claim 18 wherein the new capabil-  
2       ity mode of operation is defined by BGP TTL Security Hack (BTSH).

1       20. (ORIGINAL) The computer readable medium of Claim 16 further comprising pro-  
2       gram instructions for, in response to the router receiving a negative acknowledgement of  
3       the initial message from the peer router:

4 upgrading the peer router to the new capability mode of operation;  
5 destroying an existing session between the routers;  
6 sending messages with the first predetermined value of the capability; and  
7 communicating between the routers using messages with the first predetermined  
8 value of the capability.

1 21. (ORIGINAL) A system adapted to allow a router to efficiently determine a capabil-  
2 ity and configuration of a peer router in a computer network, the system comprising:  
3 an initiating routing protocol process executing in the router and adapted to send  
4 an initial routing protocol message to a routing protocol process executing in the peer  
5 router, the initial routing protocol message including a predetermined value of the capa-  
6 bility, the initiating routing protocol process receiving one of (i) a positive acknowl-  
7 edgement of the initial routing protocol message if the peer router supports exchanges of  
8 messages using a new capability mode of operation and (ii) a negative acknowledgement  
9 of the initial routing protocol message if the peer router does not support the new capabil-  
10 ity mode of operation.

1 22. (ORIGINAL) The system of Claim 21 wherein the initiating routing protocol proc-  
2 ess executing in the router is the Border Gateway Protocol version 4 (BGP) routing pro-  
3 tocol and wherein the capability is a time-to-live (TTL) parameter.

1 23. (ORIGINAL) The system of Claim 22 wherein the new capability mode of operation  
2 is defined by BGP TTL Security Hack (BTSH).

1 24. (ORIGINAL) The system of Claim 23 wherein the predetermined value of the TTL  
2 parameter capability is 255.

1 25. (NEW) A method comprising:  
2 sending an initial message to a peer router before a session is established with the  
3 peer router, the initial message including a first predetermined value of a capability in a  
4 field that is outside of a routing protocol that makes use of the capability;  
5 if a positive acknowledgement of the initial message is received from the peer  
6 router, determining that the peer router supports exchanges of messages using a new ca-  
7 pability mode of operation;  
8 if a negative acknowledgement of the initial message is received from the peer  
9 router, deciding that the peer router does not support the new capability mode of opera-  
10 tion and switching to an old capability mode of operation by resending the initial message  
11 with a second predetermined value of the capability.

1 26. (NEW) The method of Claim 25 wherein deciding further comprises, if a response is  
2 not received within a predetermined time, deciding that the peer router does not support  
3 the new capability mode of operation.

1 27. (NEW) The method of Claim 25 wherein the initial message is a Border Gateway  
2 Protocol (BGP) routing protocol message and wherein the capability is a time-to-live  
3 (TTL) parameter.

1 28. (NEW) The method of Claim 27 wherein the new mode of operation is a BGP TTL  
2 Security Hack (BTSH).

1 29. (NEW) The method of Claim 25 further comprising, in response to receiving a nega-  
2 tive acknowledgement of the initial message from the peer router:  
3 upgrading the peer router to the new capability mode of operation;  
4 rebooting the peer router, thereby destroying an existing session between the  
5 routers;  
6 establishing a new session by sending messages with the first predetermined value  
7 of the capability; and  
8 communicating using messages with the first predetermined value of the capabil-  
9 ity.

1 30. (NEW) An apparatus comprising:  
2 a processor configured to execute an initiating routing protocol process, the initi-  
3 ating routing protocol process configured to send an initial routing protocol message to a  
4 routing protocol process of a peer router before a session is established with the peer  
5 router, the initial routing protocol message including a predetermined value of a capabil-  
6 ity in a field that is outside of a routing protocol that makes use of the capability, and  
7 wherein  
8 the initiating routing protocol process is further configured to receive one of (i) a  
9 positive acknowledgement of the initial routing protocol message if the peer router sup-  
10 ports exchanges of messages using a new capability mode of operation and (ii) a negative  
11 acknowledgement of the initial routing protocol message if the peer router does not sup-  
12 port the new capability mode of operation, and in response to a negative acknowledge-



13   ment of the initial routing protocol message, switch to an old capability mode of opera-  
14   tion and resend the initial message with another predetermined value of the capability.

1   31. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is  
2   further configured to, if a response is not received within a predetermined time, decide  
3   that the peer router does not support the new capability mode of operation.

1   32. (NEW) The apparatus of Claim 30 wherein the initiating routing protocol process is  
2   a Border Gateway Protocol version 4 (BGP) routing protocol process and wherein the  
3   capability is a time-to-live (TTL) parameter.

1   33. (NEW) The apparatus of Claim 32 wherein the new capability mode of operation is  
2   defined by BGP TTL Security Hack (BTSH).